

## RCP 20, 21: P-controller

### How energy efficiency is improved

Enables the implementation of individually optimised controls for maximum efficiency in pneumatic installations.

### Areas of application

Pneumatic control in ventilation and air-conditioning equipment of temperature, pressure, pressure differential, humidity and flow rate in combination with appropriate transducers.

### Features

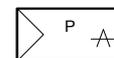
- P fixed-value controller
- P fixed-value/schedule controller
- Controllers can be used universally for the most varied of applications
- Housing, rack and front doors made of thermoplastic
- Suitable for wall or panel mounting
- Functional description and commissioning help inserted in front door
- Front panel with adjusters and 3 covered recesses for plug-in pressure gauge (XMP) making commissioning easier
- Setpoint adjuster  $X_S$  adjustable manually with scales for all Centair measuring ranges
- All settings very easy to make with a coin and % scale
- M4 measuring connections, control action adjustable (delivered with control action B)
- Compressed-air connections  $R_p$  1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

### Technical description

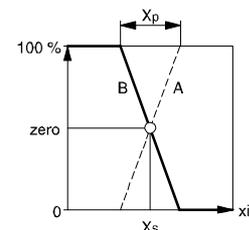
- Supply pressure 1.3 bar  $\pm$  0.1
- Easily accessible adjusters for  $X_S$  (setpoint),  $X_{P4}$  (P range),  $T_n$  (reset time),  $E$  (influence) and  $FF$  (schedule start point)
- Inputs for:
  - remote setpoint adjustment
  - controlled variable
  - command variable
- Outputs for:
  - output pressure for dampers or actuator



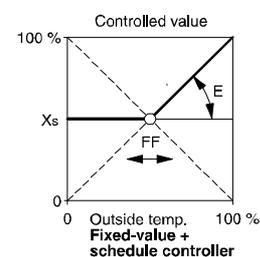
T03054



Y03247



P-controller  
B03811



B03257

Type	Description	Air		Weight
		capacity <sup>1)</sup> l/h	consumption <sup>2)</sup> l/h	
<b>RCP 20 F001</b>	fixed-value P-controller, min. limiter	400	40	0.7
<b>RCP 21 F001</b>	fixed-value + schedule P-controller	400	60	0.7
<b>RCP 20:</b>		<b>RCP 21:</b>		
Setpoint $X_S$	0...100%	Setpoint $X_S$	0...100%	
Remote adjust. of setpoint	0...100%	Remote adjustment of setpoint	0...100%	
P-band $X_{P3}$	0...100%	P-band $X_{P3}$	0...100%	
Zero point	0...100%	Zero point	0...100%	
Limiter B	0...100%	Shift starting point FF	0...100%	
		Influence E	0.25...3	
Supply pressure <sup>3)</sup>	1.3 bar $\pm$ 0.1	Wiring diagram, RCP 20	<a href="#">A02686</a>	
Input pressures	0.2...1.0 bar	Wiring diagram, RCP 21	<a href="#">A02687</a>	
Output pressures	0.2...1.0 bar	Dimension drawing	<a href="#">M297100</a>	
Permissible amb. temp.	0...55 °C	Fitting instructions	MV 3246	

### Accessories

**0297103 000** Additional bag of scales with 8 different scales according to the transducer used.

**0297133 000** Universal scales for setpoint adjuster  $X_S$ ; gradation 120, 80/160, 50/100, 30/60

1) 200 l/h for RCP 20 with limiter B activated.

2) Without transducer; air consumption for transducer connection 3 is 33 l/h more.

3) See section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

**Operation**

**RCP 20 and RCP 21**

The transducer at connection 3 converts the control variable into the pneumatic standard signal 0.2...1.0 bar (equivalent to 0...100%) within its measuring range. This actual-value signal  $x_{i3}$  is compared with the fixed setpoint  $X_S$ . If there is control deviation, the output pressure changes depending on the set P-band  $X_{P3}$  (P-control). When the actual value is equal to the setpoint ( $x_{i3} = X_S$ ), the output pressure always assumes the value zero (0.6 bar).

By including the limiter B, the RCP 20 allows the output pressure  $y$  to be limited to a (variable) minimum value.

With a pressure of 0.2...1.0 bar at input 6, the setpoint can be set remotely from 0...100%. The internal setpoint setting then functions as a minimum limitation.

A restrictor ( $\varnothing 0.2$  mm) for supplying the transducer is fitted at connection 3. The signals from the transducer and the output pressure can be checked via the M4 measuring connection or shown via the manometer.

**RCP 21: additional functions**

The transducer at connection 5 converts the command variable (e.g. outside temperature) into the pneumatic standard signal 0.2...1.0 bar (equivalent to 0...100%). This signal ( $x_{i5}$ ) is fed to the command circuit which, together with the setting parameters FF and E, creates a program for the setpoint shift of the following P-controller. The characteristic for the influence E can be placed in any of the four quadrants.

Because the outside temperature is often fed to more than one controller, the transducer at connection 5 must be supplied by a separate ( $\varnothing 0.2$  mm) restrictor.

**Additional details**

RCP 20: Front plate with adjusters for setpoint, P-band, zero and minimum limiter of  $y$ .

RCP 21: Front plate with adjusters for setpoint, P-band, zero, influence and shift starting point.

**Additional information on accessories**

**0297103 000** Additional bag of eight alternative scales

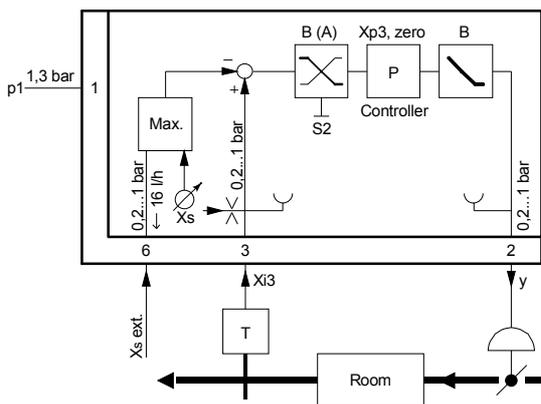
5...35 °C	20...90% rh
-20...40 °C	0...5 mbar
0...120 °C	5...10 mbar
80...200 °C	10...15 mbar

**Technical information**

Technical manual: *centair* system 304991 003

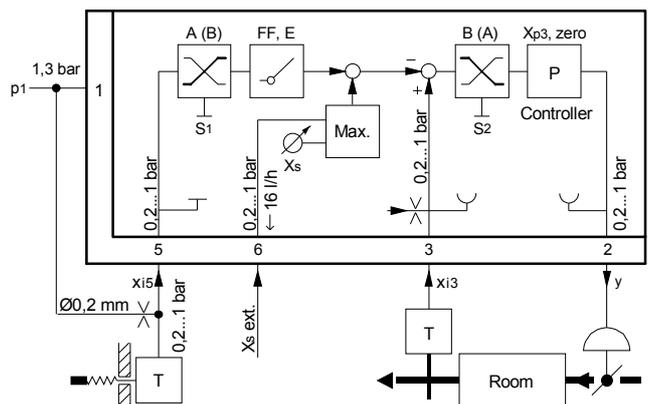
**Connection diagrams**

RCP 20



Example: Room-temperature control

RCP 21



Example: Room-temperature control

1	Supply pressure	$X_S$	Variable setpoint	$x_{i3}$	Control variable
2	Output pressure	$X_{P3}$	P-band for P-controller	$x_{i5}$	Command variable
4	Actual value for P-controller	zero	zero point	$y$	Output pressure
5	Command variable for fixed-value + schedule	FF	Shift starting point for fixed-value + schedule	S1	Control action for fixed-value + schedule
6	Remote setpoint adjustment	E	Influence	S2	Control action for controller
		B	Limiter		

## Dimension drawing

